COMMENTARY ON HODGSON'S PAPER ON PLAIN PERSON'S FREE WILL

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The plain person's view, as per Hodgson, is that free will is causally efficacious in the lived world.

Hodgson formulates nine propositions that elaborate this plain person's view of free will. He also offers detailed justifications that he hopes are philosophically and scientifically respectable. While Hodgson doesn't state anywhere what would count as a "scientifically respectable" proposition, he seems to expect that any scientific theory of consciousness and free will must fully account for his nine propositions, not just explain them away. Or, alternatively, any scientific theory of free will that is incompatible with his nine propositions cannot serve as a possible framework for developing a scientific theory of conscious free will.

The propositions themselves, which articulate clearly the commonsense view of free will, are a good beginning, since as Einstein [1936, p. 351] has noted: "science is nothing more than a refinement of everyday thinking. It is for this reason that the critical thinking of the physicist cannot possibly be restricted to the examination of the concepts of his own specific field. He cannot proceed without considering critically a much more difficult problem, the problem of analyzing the nature of everyday thinking."

However, on the philosophical front, I find two problems: (a) Hodgson doesn't justify his separation of physical and volitional will, and (b) this separation is contradictory to his claim that his view of free will is incompatible with a deterministic view of physical causation. However, I show how the separation can be philosophically justified in a manner that also avoids the contradiction stated in (b). Thus, both problems seem easily surmountable.

The task of rendering his view of free will scientific needs considerably more work. I argue that Hodgson's twin assertions about quantum theory — that quantum indeterminism is mere randomness, and that no physical theory, quantum theory included, can address the gestalt-aspect of individual experiences — are both problematic. I conclude by pointing out what it would take for Hodgson to make his nine propositions bear upon the *praxis* of science.

The contradiction in Hodgson's statement that his view of free will "is explicitly inconsistent with determinism" arises in the following way. I presume he means the determinism of classical physics. Hodgson also holds that the domain of operation of physical law does not cover the domain of operation of free will. He says as much: “I prefer to distinguish *physical causation*, which is that aspect of causation capable of being fully understood in terms of the operation of laws of nature and randomness, and *volitional causation*, in which the conscious activity of a subject or agent makes a contribution that can’t be fully understood in that way” [p. 11]. This immediately raises a difficulty with Hodgson’s position. His opening stance that his plain-person-view of free will is incompatible with the determinism of classical physics would be true only if he also considers deterministic physics to give the full story about all causation that there is. Hodgson clearly doesn’t believe in this, since he thinks volitional causation is over and beyond physical causation. These two stances appear contradictory.

I, however, believe that Hodgson’s separation of physical causation from the everyday notion of volitional causation can be justified by utilizing an analysis that I have given of scientific realism (Gomatam 2002). I will summarize that analysis here and show its utility to avoid the above-mentioned contradiction.

All physical theories, in the first instance, can only correlate what we do to what we observe in the laboratory. This is true not only of quantum theory, but of even classical mechanics, as Mach showed. According to Mach, the laboratory observations are to be treated, in the first instance, as solely our outer experiences. The scientific law is nothing but a short-hand way of representing observable regularities amidst these experiences. These experiences must be interpreted using concepts closest to our experiences, namely ordinary language concepts. This is the theory of Machian sensationism [See, for example, Mach, 1914].

Physicists, on the other hand, are realists in practice. However, scientific realism need not be seen as being opposed to Machian sensationism. Scientific realism can start with Machian sensationism as the logically necessary first step and then go beyond it. Indeed, practicing physicists first describe the observational content of a physical theory in terms of ordinary language statements, and then go beyond Machian sensationism by re-interpreting the observations using the terms of the theoretical language. Thus, a quick account of the *classical* realist conception of the scientific praxis can be said to comprise the following stages.

1. State the predictive content of the physical formalism using ordinary language, treating the laboratory observations qua our experiences. (Machian sensationism)
2. Interpret the experiences as events in the external or real world, assuming naïve realism. (Necessary for the experimentalist's praxis)
3. Verify the predictions.
4. If verified, re-describe the observations using theoretical language (A statement such as "meter needle points to +5" would become "the value of *i* was measured to be +5.").
5. Re-describe the observations using theoretical terms, but now *named* using words of the ordinary language. A statement such as "the meter needle points to +5" would now become "the value of *current* was measured to be 5 amperes."
6. Treat the value for the observed property as having existed in the world prior to and independent of the observations.

I have argued in detail elsewhere (Gomatam, 2002) that stage 5 is crucial for the physicists' claim that the *abstract* world of physics (where the dynamics of the theory takes place) is 'real', since this claim is *not* by correspondence, but by *analogy* to the real world of commonsense thinking. Briefly, in stage 5, the restatement of the scientific observations by *naming* the theoretical terms using *ordinary language words* enables the physicists to communicate the felt 'reality' of the abstract, non-sensible, physical world in terms of our only source of knowledge of the real, namely the common-sense notions of the external world in everyday experience. The ordinary language words, while naming the theoretical terms, play only a suggestive or evocative role, since the identity between the physical object and the common-sense object corresponding to its name is never perfect, only an *idealization*. Therefore, though the ordinary language words enable one to visualize the formal physical world in terms of common-sense space and time pictures, one accords the mathematical formalism itself the primacy in determining the true meaning of these terms. In this sense, the world of physics is made real only by analogy to the real world of commonsense thinking, not by correspondence. Furthermore, the world of physics is *internal* to each theory and thus is also *different* in each theory. On these counts, the world of physics cannot be directly construed as a model of the external or real world. Everyday realist thinking and scientific realist thinking, despite sharing a common realist viewpoint, meet only at the point of experience (Stage 1 above).

This means 'determinism' is a feature of the world that is *internal* to physical theory (in this case, classical mechanics) whereas, the free will of the naïve realist and everyday thinking is a feature of the real world that is *external* to physical theory. This shows why a non-deterministic and non-random free will (which operates in the real world) need not be incompatible with the determinism of classical physics (which holds in the world of physics). It also accomplishes the separation between physical causation and volitional causation that Hodgson wants.[1]

The distinction between the world of physics and the real world can also form the basis for understanding why classical physics provides answers only to "how" type questions, whereas common-sense thinking answers "why" type questions also. For example, if A throws a stone and breaks a window, both in classical mechanics and in common-sense thinking we provide an answer to the question "how did the window break?" by relating the occurrence of the individual event to the picture of motion. However, the question "why did the window break" (in the sense of why was the stone thrown in the first place) would be explainable only by using the common-sense notion of free will in terms of the volition of A. In classical mechanics, such a 'why' type question would translate to "why are the initial conditions for the stone's motion what they are" and within classical mechanics that is a given, capable of no further explanation.

Furthermore, it is necessary to stress that even at the level of answering the 'how' type questions, the two explanations differ. Classical physics accounts for the observations in terms of the motion of point-particles in the abstract Euclidean space of mathematics, while everyday thinking would relate the observation to the motion of a macroscopic object (the stone, in this case) in the lived world. The two causal accounts have their own pragmatic utility at the level of experience, where they meet, but as already noted, at the ontological level they do not correspond to each other. If we roughly identify the physical/volition causation divide that Hodgson adopts with the how/why modes of explanation, it is not so much a matter of whether physical causality can be "understood in terms of the laws of nature

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[1] Of course, this conception of the scientific realist praxis that underlies classical mechanics fails in quantum theory. However, at which stage it fails can be variously interpreted. Orthodox quantum theory, for example, regards stage 6 as failing, and thus embraces quantum contextuality: quantum mechanical properties cannot be predicated definite values except in the context of an actual measurement. Bohr placed the failure at stage 4, due to an inseparability that I discuss presently. I take the view that stage 1 itself might be seen as failing in quantum theory, in the sense that we need to invoke a different range of ordinary language vocabulary to report the observations. See Gomatam, 2002 for more details.

in physics”, as Hodgson puts it. Rather, it is that the everyday mode of thinking involving physical causality has aided the development of causal laws in physics (such as 'determinism') that yield accurate predictions in the lived world, whereas the everyday thinking in terms of volition has not.

However, it is logically possible that even the volitional discourse in everyday thinking might aid development of theories within physics that make successful predictions in the lived world, or help understand a current physical theory that makes successful predictions but otherwise present paradoxes to our understanding. Such a development would not, upon the view presented here, undermine the efficacy of our volition at the level of everyday thinking. Therefore, it would also be compatible with Hodgson's overall view about free will. This point becomes important when we consider quantum theory.

Regarding quantum theory, as already noted, Hodgson makes two points. First, he claims, “according to QM, any indeterminism is mere randomness.” [p. 1] However, randomness is not the only possible view of quantum theory. Causal interpretations of quantum indeterminism do exist, such as Bohm’s pilot-wave theory, many-worlds, or collapse interpretations.

Hodgson’s second point about quantum theory concerning our free-willed behavior arises when he says, “whole particular gestalt experiences ... have an irreducible causal role in what happens.” I agree. He goes on to say, “this causal role cannot be fully accounted for by any system of physical laws of general application, even those of QM.” [p. 7] However, quantum theory does involve a fundamental feature of inseparability and entanglement, either of the observed system with the measurement apparatus, or of pairs of distant particles in EPR-like experiments. These are holistic features, which emerge in some interpretations as physical nonlocality.

Bohr moved to avoid the consequence of physical nonlocality, but he was obliged to then treat the observed system and the observing means as a single inseparable *epistemic whole*: “...universal quantum of action expresses a feature of wholeness in atomic processes that prevents the distinction between observation of phenomena and independent behavior of the objects, characteristic of the mechanical conception of nature.” [Bohr, 1957, p. 98] He concluded, “an independent reality in the ordinary physical sense can neither be ascribed to the phenomena *nor to the agencies of observation*.” [Bohr, 1957, p. 48, italics mine]

What is not so well known perhaps is that Einstein too moved to give an epistemic reading of the Ψ function in order to avoid physical nonlocality, and he was also obliged to embrace a epistemic holism of another sort: Einstein held that the Ψ function described the state of the ensemble as a *single, logical whole*. "The description by means of a Ψ−function refers only to an ideal systematic totality but *in no wise to the individual system*." [Einstein, 1949, p. 669, italics mine][2]

In so far as quantum theory does display a gestalt-like feature, either in the form of a physical nonlocality or an epistemic holism of the Bohr/Einstein kind, Hodgson must show in greater detail why quantum theory as it stands would not be relevant to scientifically discuss the causal role of the gestalt aspect of our individual experiences.

Hodgson's claim that quantum indeterminism is mere randomness is plausible enough, granting him certain assumptions. Quantum holism, while requiring more discussion from him, might not still oblige him to revise his stand that quantum theory does not apply to conscious systems. However, I shall now discuss a third connection that arises between quantum theory and his description of free will: the language of his first three propositions on free will can be also invoked to discuss the behavior of quantum systems. This has substantial implications for the status of some of his propositions as unique characterizations of our conscious free will.

Let us take the simple case of a hydrogen atom with its electron in an excited stationary state E_m. According to the basic quantum postulate, the electron will go to any one of the available lower energy stationary states E_n by emitting radiation, and the physical laws only specify the statistics governing a large number of such individual transitions. This situation is compatible

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[2] Could Einstein have intended here a simple "ensemble interpretation" in the sense of classical statistical mechanics? I do not think so since in any such statistical ensemble interpretation, the Ψ function would represent an average state for each individual particle. Whereas, as we see in the foregoing quotation, for Einstein the Ψ function did not represent the state of the individual system at all, not even partially. Einstein no doubt used the word "incomplete" to characterize quantum theory, but he defined his notion of 'incompleteness' to Schrödinger just eleven days after the publication of the EPR paper thus:

> "One would very much like to say the following: Ψ stands in a one-to-one correspondence with the real state of the real system… If this works, I talk about a complete description of reality by the theory. However, if such an interpretation doesn't work out, then I call the theoretical description 'incomplete'." [Letter to Schrödinger, June 19, 1935; cited in Fine, 1986, p. 71]

Perhaps to emphasize that the rhetoric of 'completeness' in the EPR paper misses his real objection to quantum theory, Einstein later wrote: "The (testable) relations, which are contained [within quantum theory] are, within the natural limits fixed by the indeterminacy-relation, *complete*." [Einstein, 1949, p. 666, italics in the original]

with the language of Hodgson’s proposition 1: "There is a pre-choice state such that the way the world is and the laws of nature leave open at least two post-choice states." (The Alternatives Requirement). Hodgson acknowledges this.

In addition, the frequency of the radiation that the electron emits in the excited state depends, not just on the state it is in, but also on the state it will go to. Thus, as early as 1913, after reading Bohr's manuscript on the model of the hydrogen atom, Rutherford wrote back to Bohr to ask:

> "There appears to me one grave difficulty in your hypothesis, which I have no doubt you fully realize, namely, how does an electron decide what frequency it is going to vibrate at when it passes from one stationary state to another? It seems to me that you would have to assume that the electron knows beforehand where it is going to stop." [Bohr, 1963, p. 40-1]

One can raise the same question even today, with respect to the quantum mechanical model of the hydrogen atom. The question therefore remains relevant and important.

To be sure, we could try to avoid the problem of having to invoke the language of choice in the above situation by choosing not to relate the observations to the individual electrons alone. This indeed is the general significance of the moves made by both Bohr and Einstein mentioned earlier. I believe the real thrust and future potential of these two epistemic approaches for an alternate realist interpretation of quantum theory without a role for consciousness have not yet been fully explored.

Hodgson’s choice to see quantum mechanics as featuring an inherent randomness implies interpreting the observations in relation to the behavior of individual electrons. Thus, already in the simple case of the hydrogen atom, Hodgson's third proposition on free will — in this transition process, the subject grasps the availability of alternatives and knows how to select one of them (the 'grasping requirement') — becomes applicable also to the behavior of electrons as described by QT.

In proposition-2 Hodgson holds that “the transition from a pre-choice state to a single post-choice state is a conscious process.” Given the facts that there are pre- and post-choice alternatives, and the electron does make a transition to *one* of the possible alternative states, we are left with two possible conclusions. One is to treat proposition-2 also as applicable to the behavior of objects described by QT. This would mean quantum theory, as it stands, is a theory of consciousness and accounts for the causal efficacy of free will. But this is a conclusion that Hodgson (rightly, in my opinion) wishes to deny.

The only way out that I can see is to treat these propositions as necessary *but not sufficient* conditions for conscious free will — since the language of his first three propositions is seen to apply equally to systems described by QT.[3] With such a move, quantum theory need not involve a direct role for consciousness. I am myself inclined to the view that it is possible to develop a new, non-classical unitary ontology for matter in quantum theory without a direct appeal to consciousness. Such a new unitary ontology for matter could pave the way for a reassessment of the very issue of consciousness-matter interaction, a possibility I have discussed elsewhere [Gomatam, 1999].

In conclusion, Hodgson's stated aim — to furnish a precise formulation of the plain-person's view of free will that is philosophically and scientifically respectable — requires more work. Philosophically, I believe he commits himself (needlessly) to the stance that the determinism of classical physics is incompatible with non-deterministic, non-random free will in the lived world. This is true only if we conflate the world of physics and the 'external world' of everyday thinking via the thesis of correspondence realism which is known to have failed in physics. Once we see that the world of physics and the lived world cannot be brought into direct correspondence even in classical mechanics, we would have to ask what relevance a formulation of the notion of free will in the lived world based on common-sense notions such as Hodgson attempts could have for science. The notion of what constitutes a 'scientific proposition' has undergone a world of evolution, from the naïve idea that scientific statements are based on proof, to the more modest claim of Vienna verificationism, still weaker Popperian falsifiability, Feyerabend's methodological anarchism to modern-day scientific relativism and there is no consensus yet. However, a reasonable demand can be placed on Hodgson. For his account to become scientific, Hodgson must more specifically show what kind of 'formal' concepts that his propositions about the common sense notion of free will can give rise to in science, and to what kind of testable, empirical consequences they would lead. This is indeed the demand that the natural scientist is expected to place on any idea, with regard to its scientific content.

Additionally, my arguments regarding quantum theory in this commentary suggest that the implications may, in fact, run in the *reverse* direction. Quantum theory does indeed show that the first three propositions formulated by Hodgson apply equally to material systems

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[3] This is compatible with Hodgson's own limited claim that he sees his propositions as minimal requirements for conscious free will.

described by quantum theory. I have proposed that by treating these propositions as necessary but not sufficient conditions for conscious free will, we could avoid directly injecting subjectivity into quantum physics. We can instead deem quantum theory as a new theory of matter that is consciousness-like. This would be compatible with the prevailing view of quantum theory as an entirely physical, albeit non-classical theory of matter. It would also mean we are yet to grasp the unique and *necessary* characteristic of consciousness in ordinary thinking. That too would be in line with the general prevailing view in ‘consciousness studies’ that the very nature of human consciousness remains a mystery.

The assessment that some of Hodgson's propositions are necessary but not sufficient characteristics of conscious free will need not be seen as a negative one. Elsewhere [Gomatam, 2000], I have argued that one way to render the field of 'consciousness studies' truly scientific is to make one of its primary goals precisely the identification of such necessary but insufficient conditions for consciousness. That is, let us say we identified characteristics A-Z defining conscious free will, of which some appear to be necessary but not sufficient criteria, while the rest appear to be necessary and sufficient criteria of consciousness and free will. My proposal is that in “consciousness studies” we should be interested in the *former*, i.e. the necessary but not sufficient criteria, not the latter, since we can use the former set of criteria for developing new notions of *matter*, which would certainly be readily applicable to physics in particular and other fields of science in general. From this perspective too, I see Hodgson's efforts to be a correct first step.

REFERENCES

Bohr, N. (1957), *Atomic Physics and Human Knowledge* (New York: John Wiley & Sons).

Bohr, N. (1963) *Essays 1958-1962 on Atomic Physics and Human Knowledge* (New York, London: Interscience Publishers).

Einstein, A. (1936), 'Physics and reality', *Journal of the Franklin Institute*, 221 (3), pp. 349-82

Einstein, A. (1949), 'Remarks to the essays appearing in this collective volume', in *Albert Einstein: Philosopher-Scientist*, ed. P.A. Schilpp (Illinois: Open Court); pages cited in text refer to the 1969 edition.

Fine, A. (1986), *The Shaky Game: Einstein, Realism and the Quantum Theory* (Chicago: University of Chicago Press).

Gomatam, R. (1999) 'Quantum Theory and the Observation Problem', *Journal of Consciousness Studies*, 6 (11-12), p. 173-190. Online version available at http://www.bvinst.edu/gomatam/pub-1999-01.htm

Gomatam, R. (2000) '*What is Consciousness Studies*?' http://www.bvinst.edu/what_is_CS.htm

Gomatam, R. (2002), *Science, philosophy and consciousness* -- *On Relearning the connections from quantum theory*' paper read at the conference on "Philosophical Consciousness and Scientific Knowledge: Conceptual Linkages" New Delhi, March 1-3, 2002; To appear in forthcoming proceedings volume (ed. D.P. Chattopadhyaya), 2004 (New Delhi: Indian Council of Philosophical Research). Online version available at http://bvinst.edu/gomatam/pub-2002-03.htm

Mach, E. (1914), *The Analysis of Sensations, and the Relation of the Physical to the Psychical*. Translated from the 1st German edition by C.M. Williams (Chicago: Open Court publishing company).